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ABSTRACT

This document contains the analysis of the occupation of cabinetmaker, or joiner, that is accepted by the Canadian Council of Directors as the national standard for the occupation. The front matter preceding the analysis includes exploration of the development of the analysis, structure of the analysis, validation method, scope of the cabinetmaker occupation, occupational observations, and safety. The analysis covers six blocks plus the tasks and sub-tasks associated with each block. The blocks are: common occupational skills; machining; forming and laminating; veneers and laminates; assembly; and finishing and restoration. The section for each block describes the skills and knowledge that must be acquired to perform the tasks, any shifts or changes in technology, the components of the tasks, and the tools and equipment needed, and 18 tasks including builds prototypes, assembles cabinets, and restores woodwork. Appendix A is a list of tools and equipment, Appendix B is a glossary, Appendix C contains data from the validation of the analysis, and Appendix D is a pie chart depicting the average number of questions on an interprovincial exam for each block. (SLR)

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Occupational Analyses Series

Cabinetmaker

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The Canadian Council of Directors of Apprenticeship (CCDA) recognizes this occupational analysis as the national standard for the occupation of cabinetmaker.

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OTHER RELATED OCCUPATIONAL TITLES

This analysis covers tasks performed by a cabinetmaker whose occupational title has been identified by some provinces and territories of Canada under the following names:

- Cabinet Maker
- Joiner

LIST OF PUBLISHED OCCUPATIONAL ANALYSES *

TITLE	NOC** Code
Appliance Service Technician (1997)	7332
Aquaculture Technician (1977)	2221
Arts Administrator (1989)	0114
Automotive Painter (1995)	7322
Automotive Service Technician (1998)	7321
Automotive Technician - Automatic Transmission (1990)	7321
Automotive Technician - Electrical/Electronics (1992)	7321
Automotive Technician - Engine Repair and Fuel Systems (1989)	7321
Automotive Technician - Front-End (1989)	7321
Automotive Technician - Manual Transmission, Driveline and Brakes (1990)	7321
Aviation Machinist (1994)	7231
Baker (1997)	6252
Blaster (Surface) (1987)	7372
Boilermaker (1994)	7262
Bricklayer (2000)	7281
Cabinetmaker (2000)	7272
Carpenter (1998)	7271
Cement Finisher (1995)	7282
Construction Electrician (1994)	7241
Cook (1997)	6242
Electrical Rewind Mechanic (1999)	7333
Electronics Technician - Consumer Products (1997)	2242
Electronics Technician Vol. I (1986) (Video Equipment)	2242
Electronics Technician Vol. II (1986) (Audio Equipment)	2242

* **Red Seal analyses are indicated in bold**

** **National Occupational Classification**

Electronics Technician Vol. III (1986) (Computer Equipment)	2242
Electronics Technician Vol. IV (1986) (Office Equipment)	2242
Electronics Technician Vol. VI (1986) (Communication Equipment)	2242
Electronics Technician Vol. VII (1986) (Signaling Equipment)	2242
Electronics Technician Vol. VIII (1986) (Navigation Equipment)	2242
Electronics Technician Vol. IX (1986) (Video Game Equipment)	2242
Electronics Technician Vol. X (1987) (CADD Equipment)	2242
Electronics Technician Vol. XI (1987) (CAM Equipment)	2242
Electronics Technician Vol. XII (1987) (Robotics Equipment)	2242
Electronics Technician Vol. XIII (1987) (Biomedical and Laboratory Equipment)	2242
Electronics Technician Vol. XIV (1987) (Industrial Process-Control Equipment)	2243
Farm Equipment Mechanic (2000)	7312
Floorcovering Installer (1997)	7295
Glazier (1994)	7292
Hairstylist (1997)	6271
Heating (Gas and Oil) Servicer - Commercial and Industrial (1978)	7331
Heavy Duty Equipment Mechanic (1998)	7312
Heavy Equipment Operator (1983)	7421
Industrial Electrician (1997)	7242
Industrial Instrument Mechanic (2000)	2243
Industrial Mechanic (Millwright) (1999)	7311
Insulator (Heat and Frost) (2000)	7293
Ironworker (Generalist) (1993)	7264
Lather (Interior Systems Mechanic) (1994)	7284

Logistics (1992)	0713
Machinist (1998)	7231
Major Electrical Appliance Repairer (1984)	7332
Mobile Crane Operator (1997)	7371
Motorcycle Mechanic (1995)	7334
Motor Vehicle Body Repairer (Metal and Paint) (1997)	7322
New Home Builder and Residential Renovation Contractor (1992)	0712
Oil Burner Mechanic (1997)	7331
Painter and Decorator (2000)	7294
Partsperson (1995)	1472
Plumber (1996)	7251
Power Engineer (1997)	7351
Powerline Technician (1996)	7244
Recreation Vehicle Mechanic (2000)	7383
Refrigeration and Air Conditioning Mechanic (1997)	7313
Roofer (1997)	7291
Sheet Metal Worker (1997)	7261
Sprinkler System Installer (1995)	7252
Steamfitter-Pipefitter (1996)	7252
Steel Fabricator (Fitter) (1994)	7263
Tool and Die Maker (1997)	7232
Truck-Trailer Repairer (1994)	7321
Truck and Transport Mechanic (2000)	7321
Welder (1996)	7265

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FOREWORD

The first National Conference on Apprenticeship in Trades and Industries, held in Ottawa in 1952, recommended that the federal government be requested to co-operate with provincial apprenticeship committees and officials in preparing analyses of a number of skilled occupations. To this end, Human Resources Development Canada sponsors a program, under the guidance of the Canadian Council of Directors of Apprenticeship (CCDA), to develop a series of analyses.

The Occupational Analysis Program has the following objectives:

- to identify and group the tasks performed by skilled workers in particular occupations;
- to identify those tasks that are performed by skilled workers in every province and territory;
- to develop instruments for use in the preparation of interprovincial standards "Red Seal" examinations and curricula for training leading to the certification of skilled workers;
- to facilitate the mobility, in Canada, of trainees and skilled workers;
- to supply employers and employees, and their associations, industries, training institutions and governments with analyses of the tasks performed in particular occupations.

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GUIDE TO ANALYSIS

DEVELOPMENT OF ANALYSIS

A draft analysis is developed by a knowledgeable consultant who, with the assistance of a committee of industry experts in the field, identifies all the tasks performed in the occupation.

The draft is then assigned to occupational analysts at Human Resources Development Canada for translation and then returned to the consultant for review to ensure conformity with the nationally approved format.

The consultant will then forward a copy of this analysis to provincial/territorial authorities for validation by specialists in the field. Their recommendations are assessed and incorporated into the final draft which also includes the identification of the common core tasks performed in the occupation.

The occupational analysis is published in both official languages.

STRUCTURE OF ANALYSIS

To facilitate the understanding of the nature of the occupation, the work performed is divided into the following divisions:

A. **BLOCK**	is the largest division within the analysis and reflects a distinct operation relevant to the occupation.
B. **TASK**	is the distinct activity that, combined with others, makes up the logical and necessary steps the worker is required to perform to complete a specific assignment within a "BLOCK".
C. **SUB-TASK**	is the smallest division into which it is practical to subdivide any work activity and, combined with others, fully describes all duties constituting a "TASK".

Supporting Knowledge & Abilities

The element of skill and knowledge that an individual must acquire to adequately perform the task is identified under this heading.

Trends

Any shifts or changes in technology which affects the block are identified under this heading.

Related Components

All components of a specified task being undertaken by the cabinetmaker are identified under this heading.

Tools and Equipment

All tools and equipment necessary for the cabinetmaker to complete a task are identified under this heading.

Cabinets, furniture and architectural woodwork/millwork

Products commonly manufactured by cabinetmakers.

VALIDATION METHOD

At the request of the Canadian Council of Directors of Apprenticeship (CCDA), the Standardization SubCommittee developed a method for the validation of the national Red Seal occupational analyses.

A draft of the analysis is sent to all provinces/territories for validation. Each jurisdiction rates the sub-tasks and applies percentage ratings to blocks and tasks. This method for the validation of the national occupational analyses identifies common core tasks across Canada for a specific occupation. This feature facilitates the weighting of the Interprovincial Red Seal examinations.

DEFINITIONS

YES: the sub-task is performed by workers in the occupation in a specific jurisdiction.

NO: the sub-task is not performed by workers in the occupation in a specific jurisdiction.

BLOCK %: the average number of questions (items), derived from the collective decision made by workers within the occupation from all areas of Canada, which will be placed on an interprovincial examination to assess each block of the analysis.

TASK %: the average number of questions (items), derived from the collective decision made by workers within the occupation from all areas of Canada, which will be placed on an interprovincial examination to assess each task of the analysis.

NV: Not Validated by a province/territory.

ND: Not Designated in a province/territory.

PROVINCIAL/TERRITORIAL ABREVIATIONS

NF: Newfoundland and Labrador
NS: Nova Scotia
PE: Prince Edward Island
NB: New Brunswick
QC: Quebec
ON: Ontario
MB: Manitoba
SK: Saskatchewan
AB: Alberta
BC: British Columbia
NT: Northwest Territories
YK: Yukon

COMMON CORE

The criteria for determining common core are dependent on the performance of sub-tasks. If 70 percent of the responding jurisdictions (excluding NVs and NDs) perform the sub-task, it shall be considered common core.

Interprovincial Red Seal examinations are based on the common core identified through this validation process. This process identifies what will be assessed through the interprovincial examination.

BLOCKS AND TASKS WEIGHTING (APPENDIX "C")

This appendix represents the block and task percentages as submitted by each jurisdiction.

Each jurisdiction, with the use of a provincial/territorial occupational advisory committee, validates the content, places percentages on blocks and tasks, and indicates whether or not the sub-tasks are performed by the skilled workers within the occupation. The results of this exercise are submitted to the consultant who then analyses the data and develops this appendix which provides the individual jurisdictional validation results as well as the national averages of all responses.

PIE CHART (APPENDIX "D")

The graph depicts the national percentages assigned to blocks in the analysis.

SCOPE OF THE CABINETMAKER OCCUPATION

The term "cabinetmaker" defines a person who is capable of constructing and repairing cabinets, furniture, fixtures and related products for various residential, commercial and industrial uses. Cabinetmakers manufacture furniture and related products whose main components are wood and other composite materials.

A cabinetmaker has the knowledge, skills and abilities to read drawings and specifications; discuss projects with clients; plan work activities and estimate job costs; make layouts and patterns; use various hand tools, power tools, and machines to cut, shape, joint, smooth and assemble cabinets, furniture, joinery and millwork products; apply veneers, inlays and laminates; perform sub-assembly and final assembly of wood products, restore and finish furniture and fixtures and install products at the job site.

Cabinetmakers may be employed in various types of companies such as furniture manufacturing, restoration and construction companies and cabinetmaking contractors or they may also be self-employed.

In recent years, the cabinetmaking industry has been increasingly oriented toward incorporating information technology, such as computer-assisted manufacturing (CAM) in its production system.

OCCUPATIONAL OBSERVATIONS

The National Occupational Analysis committee identified some significant trends during the analysis of the cabinetmaker occupation. These trends are briefly outlined below.

Although we tend to see fewer occupations requiring skilled labour in the manufacturing sector due to rapid technological development, it appears that cabinetmaking, in general, has essentially retained most of its traditional competency requirements. To a large extent cabinetmaking is still a craft industry. This can be explained in part by the high cost of technological innovations and products which do not lend themselves readily to mass production.

There is also some evidence of modernization in the cabinetmaking industry, especially among some large and medium sized factories. Some firms have successfully implemented modern manufacturing systems incorporating new technologies, such as computer-assisted design and manufacturing (CAD-CAM) and computer numerical control (CNC). Present economic conditions have resulted in a tremendous increase in the production of goods for export and have lead to greater investments in technology to increase production. These factors have resulted in an increased demand for new cabinetmakers.

Production is becoming increasingly knowledge-intensive in work environments where technology has been implemented. Consequently, the cabinetmaking occupation has become considerably more specialized in these settings.

As in many other occupations, sound employability skills are becoming increasingly important for cabinetmakers. These essential skills include: learning ability, computation, writing, reading, communication, listening, problem solving, flexibility, adaptability, creative thinking, organizational effectiveness and interpersonal skills.

There is a general concern regarding the decline in the number of apprentices entering the occupation. This problem, while not unique to cabinetmaking, has reached a crisis level in many other apprenticeable trades due to the burst of the baby boom and to the strong emphasis currently being placed on academic learning and completion of higher education. New initiatives are required to attract apprentices to the occupation, especially those from designated groups (young people, women and first nations) who are underrepresented in the industry. In addition, some regions have introduced high school apprenticeship initiative to encourage students to enter the trade.

SAFETY

Safe working procedures and conditions, accident prevention and the preservation of health are of primary importance to industry in Canada. These responsibilities are shared and require the joint efforts of government, employers and employees. It is imperative that all parties become aware of circumstances that may lead to injury or harm. Safe learning experiences and environments can be created by controlling the variables and behaviours that may contribute to accidents or injury.

It is generally recognized that a safety-conscious attitude and work practices contribute to a healthy, safe and accident-free working environment.

It is imperative to apply and be familiar with the Occupational Health and Safety Act and Regulations. As well, it's essential to determine workplace hazards and take measures to protect oneself, co-workers, the public and the environment.

As safety education is an integral part of training in all jurisdictions, personal safety practices are not recorded in this document. However, the technical safety aspect relating to each task and sub-task are included throughout this analysis.

ANALYSIS

BLOCK A

COMMON OCCUPATIONAL SKILLS

Trends: *The are a few common denominators among firms employing cabinetmakers. Cabinetmakers may need to be very well rounded or highly specialized.*

In cabinetmaking firms, estimates are increasingly being produced by specialists using computers. More emphasis is being placed on optimization because of the rising cost of materials. Automation and computer control technologies are becoming more common.

In many firms most of the shop drawings are prepared by specialists using the computer assisted design (CAD) system.

With increasing emphasis being placed on cost effectiveness, most of the upkeep and sharpening of tools is contracted out to specialized firm.

Although each worker is expected to verify the quality of his or her own work, in many firms, more elaborate quality control systems are in place. To maintain competitiveness, greater emphasis is being placed on productivity and quality.

The tasks of designing and fabricating templates, jigs and fixtures is accomplished mostly by specialists and often with the help of a CNC.

High technology tools such as stud finders, laser beam levels, electronic levels and digital meters have improved the installation process.

Task 1 **Plans work activities.**

Related Components: Tenders, contract documents, warranty policies, drawings and specifications, material maintenance guidelines, hardwoods, softwoods, sheet materials, hardware, fastening devices, strength of materials, adhesives, finishes, production planning for cabinets, furniture, architectural woodwork/millwork.

Tools and Equipment: Drawing instruments, drawing board, calculator, computer, software, digital meter, moisture meter.

Sub-task

1.01 **Interprets drawings and specifications.** **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

Supporting Knowledge & Abilities

1.01.01	knowledge of contract documents (drawings, agreements and specifications)
1.01.02	knowledge of metric and imperial systems
1.01.03	ability to read and interpret contract documents, tenders and standards set by the Architectural Woodwork Manufacturers Association of Canada (AWMAC)
1.01.04	ability to determine scope of work and scheduling of deadlines
1.01.05	ability to determine type and quality of construction, materials, workmanship and finish from specifications
1.01.06	ability to source new materials

Sub-task

1.02 Estimates job cost.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

1.02.01	knowledge of various materials and hardware
1.02.02	knowledge of waste factors for solid wood, sheet materials and other products
1.02.03	ability to determine material requirements
1.02.04	ability to determine job costs
1.02.05	ability to perform mathematical calculations

Sub-task

1.03 Plans work process.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

Supporting Knowledge & Abilities

1.03.01	knowledge of various types of material and hardware used in the construction of cabinets, furniture, millwork, doors and/or frames
1.03.02	knowledge of various types of adhesives and application techniques
1.03.03	knowledge of lumber technology : hardwood, softwood, wood fibre, wood cells, grain patterns, quality of wood, natural and artificial drying
1.03.04	knowledge of the various types of wood parts used in the construction of cabinets, furniture, joinery and millwork
1.03.05	ability to plan machining processes so as to ensure a safe, logical sequence of operations
1.03.06	ability to plan machining processes in order to ensure that tools, materials and equipment are readily accessible
1.03.07	ability to examine and evaluate stock defects
1.03.08	ability to use a moisture meter for measuring moisture content in lumber
1.03.09	ability to properly store solid wood before and between operations
1.03.10	ability to optimise the yield of solid wood stock and sheet goods
1.03.11	ability to write schedule of materials
1.03.12	ability to distinguish machine set-up, product handling and machine times

Sub-task

1.04 Makes shop drawings. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

Supporting Knowledge & Abilities

1.04.01	knowledge of basic principles of orthographic, isometric and oblique drawings
1.04.02	knowledge of ergonomics
1.04.03	knowledge of the 32 mm system for cabinets, hardware and joints
1.04.04	knowledge of furniture styles
1.04.05	knowledge of key elements of related trades
1.04.06	knowledge of various construction techniques
1.04.07	knowledge of miscellaneous materials (i.e. glass, metals, plastics, etc.)
1.04.08	knowledge of computer technology (CAD – creating drawings)
1.04.09	ability to determine best method of installation
1.04.10	ability to prepare sketches
1.04.11	ability to draw plan, elevation and sectional views
1.04.12	ability to simplify designs to facilitate production
1.04.13	ability to draw enlarged construction details, exploded views and joints
1.04.14	ability to dimension drawings and to label parts, components, assemblies, sub-assemblies and hardware requirements
1.04.15	ability to communicate ideas, designs and methods of construction for the manufacture of a project

Sub-task

1.05 Lays out components. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

1.05.01	ability to take and accurately record site measurements
1.05.02	ability to check angles and draw rough sketches of site plan with access to building
1.05.03	ability to verify access for electricity, plumbing, heating, air-conditioning and communication devices
1.05.04	ability to verify compliance with regulations and codes
1.05.05	ability to verify sizes of equipment fitting into cabinets
1.05.06	ability to assess sizes of units and their installation in relation to constraints regarding transportation and site access
1.05.07	ability to create layout and templates accurately

Task 2 Uses hand and portable power tools.

Related Components: Care, use and upkeep of tools, grinding and sharpening of edge-cutting hand tools, licensing and permit requirements for powder-actuated tools.

Tools and Equipment: Standard tool kit, hand tools, layout tools, metal working tools, portable power tools, personal protective equipment.

Sub-task

2.01 Uses hand tools. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

Supporting Knowledge & Abilities

2.01.01 ability to shape wood using various edge-cutting tools

2.01.02 ability to cut wood and wood products using various types of hand saws

2.01.03 ability to smooth surfaces with a plane

2.01.04 ability to bore and drill holes

2.01.05 ability to use metalworking tools

Sub-task

2.02 Maintains hand tools.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

2.02.01 ability to maintain hand tools

2.02.02 ability to sharpen tool blades and bits

Sub-task

2.03 Uses portable power tools.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

2.03.01 ability to use portable wood cutting tools

2.03.02 ability to shape cabinet components using a portable router, panel trimmer, spline joinery system, power plane or angle grinder

2.03.03 ability to secure and assemble components using portable power drills, screw guns, nail guns, staplers, glue sprayers and powder-actuated tools

2.03.04 ability to use portable sanders

2.03.05 ability to perform basic maintenance of various portable power tools

Task 3 **Maintains machines and equipment.**

Related Components: Maintenance schedule, manufacturer instructions.

Tools and Equipment: Refer to Appendix A under Machines and Equipment and Personal Protective Equipment.

Sub-task

3.01 Performs preventive maintenance.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

3.01.01 knowledge of lubricants and lubrication schedule

3.01.02 ability to clean machines and equipment

3.01.03 ability to lubricate working parts

3.01.04 ability to inspect parts for wear and tear

3.01.05 ability to perform preventive maintenance

3.01.06 ability to conduct safety checks of machines and equipment

3.01.07 ability to tune up woodworking machinery

Sub-task

3.02 Performs scheduled maintenance.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

3.02.01 knowledge of grinding angles for various types of cutter blocks

3.02.02 knowledge of cutter balance

Supporting Knowledge & Abilities

3.02.03	knowledge of sharpening knives, cutters, etc.
3.02.04	ability to install knives and cutters
3.02.05	ability to perform scheduled maintenance of woodworking machines and equipment
3.02.06	ability to troubleshoot woodworking machines and equipment
3.02.07	ability to set table beds

Task 4 **Builds prototypes.**

Related Components: Shop-manufactured related devices, cabinet, furniture, architectural woodwork/millwork design, prototyping, tooling and metalwork.

Tools and Equipment: Standard tool kit, hand tools, portable power tools, metalworking tools, machines and equipment and personal protective equipment.

Sub-task

4.01 **Designs templates, jigs and fixtures.**

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

4.01.01	knowledge of the principles of sound design for templates, jigs and fixtures
4.01.02	ability to analyse production processes to determine templates, jigs and fixtures required
4.01.03	ability to manufacture related devices as needed

Sub-task

4.02 Fabricates templates, jigs and fixtures. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

4.02.01	knowledge of various fastening devices used in the construction of jigs and fixtures
4.02.02	knowledge of assembly techniques to withstand stress and physical strain
4.02.03	ability to prepare metal parts
4.02.04	ability to assemble jigs and fixtures
4.02.05	ability to select and install holding clamps on jigs and fixtures
4.02.06	ability to try out templates, jigs and fixtures in order to assess accuracy, efficiency and safe operation
4.02.07	ability to label jigs and fixtures with the date, job number, cutter diameter, guide dimensions cutters and construction notes
4.02.08	ability to select proper materials for durability, time and use

Sub-task

4.03 Designs prototypes. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

4.03.01	knowledge of one-off and mass production techniques
4.03.02	ability to plan the construction of a prototype
4.03.03	ability to determine most appropriate production techniques and machines for each component

Supporting Knowledge & Abilities

4.03.04 ability to make accurate cost estimates for prototyping

Sub-task

4.04 Builds prototypes.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

4.04.01 ability to machine and assemble prototypes

4.04.02 ability to evaluate prototypes and to modify as required

Task 5 Works on job site.

Related Components: Shop-manufactured related devices, packaging materials, packaging design, packaging cabinets, furniture, architectural woodwork/millwork and knock-down furniture, leveling, fastening devices, hardware, transportation and storage of cabinets and interaction with other trades persons.

Tools and Equipment: Refer to Appendix A under Standard Tool Kit and Portable Power Tools.

Sub-task

5.01 Prepares products for shipment.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

5.01.01 ability to visit job site to ensure access, space, services and proper blocking

Supporting Knowledge & Abilities

5.01.02	ability to pack and prepare products for transportation in order to prevent damages
5.01.03	ability to design cost-effective packages
5.01.04	ability to determine products movement on shop floor
5.01.05	ability to establish delivery schedules

Sub-task

5.02 Installs products.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

5.02.01	knowledge of proper storage
5.02.02	knowledge of common fastening devices
5.02.03	knowledge of proper site conditions relative to heat, moisture and light.
5.02.04	knowledge of subtrades and trades requirements that follow up.
5.02.05	ability to prepare site to ensure proper, clean and effective installation
5.02.06	ability to unload cabinets to prevent damages
5.02.07	ability to align, fit, scribe, adjust, level, shim and secure prefabricated cabinets according to specifications
5.02.08	ability to provide proper blocking
5.02.09	ability to make cut-outs for electrical and mechanical outlets
5.02.10	ability to perform house keeping on-site

Sub-task

5.03 Installs hardware. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

5.03.01 knowledge of hardware available

5.03.02 ability to install hardware

5.03.03 ability to adjust hardware, cabinets and furniture components

BLOCK B

MACHINING

Trends: *Greater emphasis is being placed on optimization because of the rising cost of materials. A shift from traditional production techniques to the implementation of computer numerical control (CNC) technology is being experienced.*

The task of setting up and operating equipment for shaping furniture, cabinets and architectural woodwork and millwork components is being performed by specialists in some medium and large sized factories where CNC machines have been introduced.

In some jurisdictions, the duration of cabinetmaker training programs has been increased, or other subject areas abridged, to accommodate the additional skill requirements resulting from the introduction of new technologies such as CAD, CAM, CIM, CNC, etc. Manufacturers are increasingly providing training to cabinetmakers in the use of their products.

Task 6 **Machines components using stationary woodworking machines.**

Related Components: Shop-manufactured related devices, adhesives, gluing and clamping, optimization of resources, ISO standards, woodworking joints, parts and components for cabinets, furniture, architectural woodwork/millwork, abrasive materials, edge banding.

Tools and Equipment: Refer to Appendix A under Machines and Equipment and Personal Protective Equipment.

Sub-task

6.01 Breaks out solid wood. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

6.01.01 knowledge of the properties and characteristics of wood

6.01.02 knowledge of machinery used to break out solid stock

6.01.03 ability to take off measurements from production dockets

6.01.04 ability to cut stock to rough sizes

6.01.05 ability to edge and surface stock

6.01.06 ability to glue machined stock

6.01.07 ability to trim glued parts to finish size

Sub-task

6.02 Breaks out sheet materials. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

6.02.01 knowledge of proper procedures prior to operation of tools

6.02.02 knowledge of various applications of different types of saw blades

6.02.03 knowledge of the properties, characteristics, grades and strength of various types of built-up materials

6.02.04 ability to adjust fences

Supporting Knowledge & Abilities

6.02.05 ability to select and install blades

6.02.06 ability to cut stock using different types of saws

6.02.07 ability to straighten and square materials

6.02.08 ability to maximize the use of sheet materials

6.02.09 ability to finish-cut sheet materials

Sub-task

6.03 Dresses solid wood.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

6.03.01 ability to surface and edge stock in a logical and proper sequence

6.03.02 ability to straighten and square materials

6.03.03 ability to cut tapers, bevels, chamfers and rabbets

6.03.04 ability to machine stock to thickness and width

6.03.05 ability to adjust planers

6.03.06 ability to mill lumber to tolerances

Sub-task

6.04 Shapes solid wood and composite materials.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

6.04.01 knowledge of CNC equipment and duplicators for duplicating parts

6.04.02 ability to use wood shaping equipment

Supporting Knowledge & Abilities

6.04.03 ability to mount and dismount cutters

6.04.04 ability to machine parts on boring equipment

6.04.05 ability to use sawing equipment

Sub-task

6.05 Machines joints. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

6.05.01 knowledge of various types of assembly joints

6.05.02 ability to lay out assembly joints

6.05.03 ability to machine assembly joints

6.05.04 ability to set up for machine joints

Sub-task

6.06 Sands products. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

6 06.01 knowledge of various types of abrasives

6.06.02 knowledge of various types of backing

6.06.03 knowledge of sanding actions of various types of sanders

6.06.04 ability to sand parts using sanding blocks

6.06.05 ability to use portable power sanders

6.06.06 ability to use stationary sanders

6.06.07 ability to make sanding pads, jigs and fixtures

Supporting Knowledge & Abilities

6.06.08	ability to securely mount abrasives on sanding pads
6.06.09	ability to perform final sanding ready for the application of finishes

Sub-task

6.07 Performs quality control functions.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

6.07.01	knowledge of ISO standards
6.07.02	knowledge of allowances required to compensate for material movement
6.07.03	knowledge of appropriate environmental conditions for the storage of materials
6.07.04	knowledge of grain and colour matching
6.07.05	ability to store materials properly
6.07.06	ability to inspect materials to ensure compliance with specifications

Task 7 Machines components using automated equipment.

Related Components:	Shop-manufactured related devices, optimization of resources, ISO standards, wood, parts and components cabinets, furniture, architectural woodwork/millwork, abrasive materials, edge banding.
Tools and Equipment:	Refer to Appendix A under Machines and Equipment and Personal Protective Equipment.

Sub-task

7.01 Sets up automated equipment for production run. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	no	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

7.01.01	knowledge of various types of industrial equipment in common use
7.01.02	knowledge of the capacity and limitations of machining equipment
7.01.03	ability to set up industrial equipment

Sub-task

7.02 Machines components. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	no	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

7.02.01	knowledge of computer-controlled NC machines
7.02.02	knowledge of computer assisted design (CAD) and computer assisted manufacturing (CAM)
7.02.03	knowledge of computerized production planning (CPP)
7.02.04	knowledge of computer-integrated manufacturing (CIM)
7.02.05	ability to machine components using industrial equipment

BLOCK C

FORMING AND LAMINATING

Trends: *New bending products have significantly facilitated aspects of forming and laminating.*

Task 8 **Bends wood and related materials.**

Related Components: Shop-manufactured related devices, cabinets, furniture, architectural woodwork/millwork, chair parts, stringers, handrails, door and door frames, curved mouldings and bendable ply and specialty products.

Tools and Equipment: Standard tool kit and portable power tools, crosscut saw, table saw, jointer, thickness planer, drill press, measuring tape, gloves, goggles, bending and form equipment, clamps, pin table, jigs, vacuum press, vacuum bag.

Sub-task

8.01 **Bends cabinets and furniture parts.**

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	no	yes	ND	NV	ND	yes	yes	NV	NV

8.01.01 knowledge of form construction

8.01.02 knowledge of atmospheric pressure

8.01.03 knowledge of allowances required for straining, expansion and spring back

8.01.04 ability to design and build forms, steam bending box and vacuum presses

8.01.05 ability to steam wood for bending

8.01.06 ability to bend steamed parts

8.01.07 ability to machine steam-bent parts

8.01.08 ability to vacuum-press irregular surfaces

8.01.09 ability to machine vacuum-bent parts

Sub-task

8.02 Uses flexible composite materials.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

8.02.01 knowledge of lay-up of sub-structure prior to application

8.02.02 ability to properly identify materials and their uses

8.02.03 ability to apply flexible composite materials

Sub-task

8.03 Bends solid and composite materials.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

8.03.01 knowledge of materials in common use for bending

8.03.02 knowledge of lay-up of sub-structure prior to application

8.03.03 knowledge of glue-up procedures

8.03.04 knowledge of adhesive properties

8.02.05 ability to bend solid and composite material

Task 9 Laminates wood and related materials.

Related Components: Shop-manufactured related devices, cabinets, furniture, architectural woodwork/millwork, chair parts, panels and blanks, handrails, doors, door frames and specialty products.

Tools and Equipment: Standard tool kit and portable power tools, crosscut saw, rip saw, jointer, thickness planer, drill press, measuring tape, gloves, goggles, clamping tables.

Sub-task

9.01 Builds forms for curved lamination.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

9.01.01 knowledge of wood laminating principles

9.01.02 knowledge of allowances required for straining, expansion, springback and atmospheric pressures

9.01.03 ability to design and construct wood laminating forms

9.01.04 ability to dress curved laminations

9.01.05 ability to use proper fastening devices

Sub-task

9.02 Laminates parts and components.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

9.02.01 knowledge of the properties and characteristics of various types of adhesives, strength, application, clamping and drying time

9.02.02 ability to prepare wood for laminating

9.02.03 ability to laminate parts

9.02.04 ability to machine components

BLOCK D

VENEERS AND LAMINATES

Trends: *The introduction of new materials on the market, combined with the application of new technologies, has resulted in an increased preparation and application of inlays.*

There is an increased use of built-up materials and laminated plastics.

The introduction of new products calls for additional skills and knowledge in the area of the preparation and application of inlays and solid surfaces.

Task 10 **Applies veneers and inlays.**

Related Components: Shop-manufactured related devices, cabinets, furniture, architectural woodwork/millwork, adhesives, flitches, pre-manufactured sheet veneers.

Tools and Equipment: Standard tool kit, guillotine, veneer slicing machine, veneer splicer, knives, jointer, crosscut saw, circular saw, pin router, portable router, veneer saw, stitcher, automated sander, stroke sander, vacuum press, vacuum bag, heat press, J-rollers, pneumatic press, templates, glue application systems.

Sub-task

10.01 Prepares veneers and inlays. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

10.01.01 knowledge of various methods of cutting veneers

10.01.02 knowledge of proper storage techniques

10.01.03 knowledge of various types of veneers

10.01.04 knowledge of various types of adhesives used for veneering

10.01.05 ability to estimate the quantity of veneer required in the flitch

10.01.06 ability to select veneer by colour and grain pattern

Supporting Knowledge & Abilities

10.01.07 ability to cut veneers

10.01.08 ability to match veneers to form different patterns: slip, book, diamond, random match, etc.

10.01.09 ability to splice veneers

10.01.10 ability to prepare surfaces to be veneered

10.01.11 ability to apply veneers

10.01.12 ability to repair veneers

Sub-task

10.02 Applies veneers and inlays. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

10.02.01 knowledge for proper sequencing for applying veneers and inlays

10.02.02 ability to recess stock to receive inlays

10.02.03 ability to cut and apply inlays

Task 11 Applies laminated materials.

Related Components: Shop-manufactured related devices, tabletops, countertops, cabinets, furniture, architectural woodwork/millwork, paneling, backing materials, adhesives, metal laminates, plastic laminates, solid core laminates, chemical resistant plastic laminates, acid resistant laminates.

Tools and Equipment: Standard tool kit, personal protective equipment, table saw, circular saw, band saw, tile knife, trimmer, files, planes, router, router bits, clamps, paint brush, postforming machine, heat gun, J-rollers, press, glue sprayer, glue spreader, carbide tip blade, caulking gun, scrapers, locating spacers.

Sub-task

11.01 Prepares plastic and metal laminates.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

11.01.01	knowledge of the properties and characteristics of various types of adhesives used for gluing laminates
11.01.02	knowledge of various types, sizes and finishes of laminate materials
11.01.03	knowledge of the properties and characteristics of various types of plastic and metal laminates
11.01.04	ability to cut laminates

Sub-task

11.02 Applies plastic and metal laminates.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

11.02.01	knowledge of materials required to touch up and repair laminates
11.02.02	ability to prepare base for laminates
11.02.03	ability to apply laminates
11.02.04	ability to trim edges of laminates
11.02.05	ability to clean laminates
11.02.06	ability to produce laminated joints

Task 12 **Applies solid surfaces.**

Related Components: Shop-manufactured related devices, cabinets, furniture, architectural woodwork/millwork, pre-formed sinks, solid surfaces such as Corian, Sorrell, etc., specialized bonding agents (seam kits), abrasives.

Tools and Equipment: Routers, sanders, polishers, clamps, hand screws, spring clamps, drill, table saw, methyl hydrate, personal protection equipment, glue guns, heat guns, specialized bits, templates.

Sub-task

12.01 Prepares solid surfaces. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	no	yes	NV	NV

12.01.01 knowledge of manufacturers certification programs required to work solid surfaces

12.01.02 knowledge of proper sub-structure and perimeter support

12.01.03 knowledge of adhesives and installation techniques

12.01.04 ability to weld joints of solid surface materials

12.01.05 ability to machine, polish and clean solid surface materials

Sub-task

12.02 Installs solid surfaces. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	no	yes	NV	NV

12.02.01 ability to prepare base for solid surface materials according to manufacturers instructions

12.02.02 ability to install solid surface materials

12.02.03 ability to repair solid surface materials

Task 13 **Applies edge treatment.**

Related Components: Shop-manufactured related devices, cabinets, furniture and architectural woodwork/millwork.

Tools and Equipment: Routers, sanders, polishers, clamps, hand screws, spring clamps, drill, table saw, personal protection equipment, glue guns, heat guns, specialized bits, templates.

Sub-task

13.01 Prepares edges and materials. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

13.01.01 knowledge of various types of edging

13.01.02 knowledge of various assembly methods

13.01.03 ability to prepare materials for edge treatment

Sub-task

13.02 Applies edge treatment. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

13.02.01 knowledge of various types of adhesives

13.02.02 knowledge of various clamping techniques

13.02.03 ability to select and apply various clamping techniques

13.02.04 ability to apply edging

13.02.05 ability to machine edges

BLOCK E

ASSEMBLY

Trends: *In some firms, the assembly of products is increasingly accomplished with the aid of automated machinery. In many firms, the use of automated equipment specialized adhesives has resulted in an increased rate of assembly.*

Task 14 **Assembles cabinets.**

Related Components: Shop-manufactured related devices, cabinets, hardware, adhesives.

Tools and Equipment: Standard tool kit, stapler, mallet, nailers, pneumatic compressors, screwdrivers, glue applicator, clamps, personal protective equipment, dowel insertion systems, biscuit joiners, edge banders and hinge boring and inserting machine for adjustable shelvings.

Sub-task

14.01 **Performs sub-assembly of cabinets.**

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

14.01.01 knowledge of various assembly methods

14.01.02 knowledge of various hardware and fasteners

14.01.03 knowledge of adhesives

14.01.04 ability to assemble cabinet frames, fronts, backs, sides and tops

14.01.05 ability to install required hardware

14.01.06 ability to use hardware and fasteners

14.01.07 ability to use adhesives

Sub-task

14.02 Performs final assembly of cabinets.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

14.02.01	knowledge of various hardware and fasteners
14.02.02	knowledge of adhesives
14.02.03	ability to assemble fabricated components and sub-assemblies of cabinets
14.02.04	ability to install and adjust hardware
14.02.05	ability to fit braces to correct angle
14.02.06	ability to use hardware and fasteners
14.02.07	ability to use adhesives

Task 15 Assembles furniture.

Related Components: Shop-manufactured related devices, furniture, hardware, adhesives.

Tools and Equipment: Standard tool kit, stapler, mallet, nailers, pneumatic compressors, screwdrivers, glue applicator, clamps, personal protective equipment, dowel insertion systems, biscuit joiners.

Sub-task

15.01 Performs sub-assembly of furniture.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

15.01.01	knowledge of various hardware and fasteners
15.01.02	knowledge of adhesives

Supporting Knowledge & Abilities

15.01.03 knowledge of various assembly methods

15.01.04 ability to assemble drawers

15.01.05 ability to create furniture assemblies

15.01.06 ability to assemble panel doors

15.01.07 ability to install required hardware

15.01.08 ability to use various hardware and fasteners

15.01.09 ability to use adhesives

Sub-task

15.02 Performs final assembly of furniture.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

15.02.01 knowledge of various hardware and fasteners

15.02.02 knowledge of adhesives

15.02.03 ability to assemble fabricated components and sub-assemblies of furniture

15.02.04 ability to install and adjust hardware

15.02.05 ability to fit braces to correct angle

15.02.06 ability to use various hardware and fasteners

15.02.07 ability to use adhesives

Task 16 Assembles architectural woodwork/millwork products.

Related Components: Shop-manufactured related devices, cabinets, furniture, architectural woodwork/millwork, adhesives, and specialty products.

Tools and Equipment: Standard tool kit, stapler, mallet, nailers, pneumatic compressors, screwdrivers, glue applicator, clamps, personal protective equipment, dowel insertion systems, biscuit joiners.

Sub-task

16.01 Performs sub-assembly of architectural woodwork/millwork products.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

16.01.01	knowledge of various hardware and fasteners
16.01.02	knowledge of adhesives
16.01.03	ability to assemble interior sidelights, transoms, etc.
16.01.04	ability to assemble doors, windows and frames
16.01.05	ability to install glass
16.01.06	ability to prepare components for hardware installation
16.01.07	ability to use various hardware and fasteners
16.01.08	ability to use adhesives

Sub-task

16.02 Performs final assembly of architectural woodwork/millwork products.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

16.02.01	knowledge of various hardware and fasteners
16.02.02	knowledge of adhesives
16.02.03	knowledge of various assembly methods

Supporting Knowledge & Abilities

16.02.04	ability to perform final assembly
16.02.05	ability to cut and fit mouldings
16.02.06	ability to carve mouldings
16.02.07	ability to cut regular and irregular shaped panels
16.02.08	ability to use various hardware and fasteners
16.02.09	ability to use adhesives
16.02.10	ability to install and adjust hardware and other components

BLOCK F

FINISHING AND RESTORATION

Trends: *In some firms, the finishing process is performed by specialists. The preparation and finishing of products is increasingly being performed with the use of automated equipment. Higher quality non-toxic finishes are being produced. There is an increased awareness of environmental concerns regarding the use of toxic finishes.*

Task 17 **Prepares and applies finishing materials.**

Related Components: Shop-manufactured related devices, various application systems (such as high-volume low-pressure systems), curtain coating, grain printing, finishing materials for cabinets, furniture, architectural woodwork/millwork.

Tools and Equipment: Standard tool kit, sanding block, cabinet scraper, personal protective equipment, wipers, brushes, blow torch, spray booths, respirators, robotic finishing systems, roller coaters, curtain coaters, curing ovens, tack rags, viscosity cups, film gauge.

Sub-task

17.01 Treats surfaces for finishing. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

17.01.01 knowledge of abrasives suitable for final sanding

17.01.02 knowledge of finishing materials

17.01.03 ability to remove scratches, excess glue and other surface imperfections

17.01.04 ability to repair veneered and solid wood surfaces

17.01.05 ability to recognize defective products

17.01.06 ability to perform final sanding

17.01.07 ability to apply stabilizers

Sub-task

17.02 Prepares finishing materials. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	no	ND	NV	ND	yes	yes	NV	NV

17.02.01 knowledge of WHMIS (Workplace Hazardous Materials Information System) symbols

17.02.02 knowledge of critical data sheets, such as material safety data sheets (MSDS)

17.02.03 knowledge of various types and properties of finishing materials

17.02.04 knowledge of proper storage techniques to prevent damages

17.02.05 ability to prepare formulas and colours

Supporting Knowledge & Abilities

17.02.06 ability to mix finishing materials

17.02.07 ability to use viscosity cups and to take readings

Sub-task

17.03 Finishes wood products. **Supporting Knowledge & Abilities**

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	no	ND	NV	ND	yes	yes	NV	NV

17.03.01 knowledge of relative humidity

17.03.02 knowledge of surface tension and finishes

17.03.03 ability to apply wash coat

17.03.04 ability to apply fillers

17.03.05 ability to apply top-coats

17.03.06 ability to apply stain

17.03.07 ability to use various spraying systems

17.03.08 ability to recognize and correct furniture flaws

17.03.09 ability to use film gauge

17.03.10 ability to rub, polish and clean surfaces

Task 18 Restores woodwork.

Related Components: Shop-manufactured related devices.

Tools and Equipment: Standard tool kit, hand tools, portable power tools, machines and equipment, personal protective equipment, wipers, brushes, blow torch, spray equipment, spray booths.

Sub-task

18.01 Repairs woodwork for restoration purposes.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

18.01.01 knowledge of furniture styles

18.01.02 knowledge of furniture assembly methods

18.01.03 knowledge of finish removers

18.01.04 ability to determine restoration requirements

18.01.05 ability to replicate new parts and existing artifacts using hand tools and machinery

Sub-task

18.02 Touches up woodwork.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

18.02.01 knowledge of various methods required to retouch finishing

18.02.02 ability to replicate finish

Sub-task

18.03 Strips woodwork.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

18.03.01 knowledge of various stripping products

18.03.02 knowledge of various finishing removal techniques

18.03.03 ability to strip old finishes

Supporting Knowledge & Abilities

18.03.04 ability to scrape and sand surfaces for staining and finishing

Sub-task

18.04 Refinishes woodwork.

Supporting Knowledge & Abilities

NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK
NV	yes	yes	yes	yes	ND	NV	ND	yes	yes	NV	NV

18.04.01 knowledge of historical finishing techniques

18.04.02 ability to match existing finish

APPENDICES

TOOLS AND EQUIPMENT

Standard Tool Kit

back saw
chalk line
clamps
compasses
countersink bits
dividers
dovetail saw
drill bits
driver tips/bits
file
file card
first aid kit
hack saw
hammer
hand saw
jack plane
level
low-angle block plane
marking gauge
measuring tape
nail sets
plumb bob
putty knife
rabbet plane
router plane
sanding block
scraper
scratch awl
screwdrivers
side cutting pliers
sliding T-bevel
steel square
trammel points
try square
utility knife
wood chisels
wood file
wood rasp
wrenches

Personal Protective Equipment

apron
ear plugs
dust mask
goggles
safety boots
safety glasses
safety gloves
respirator

Layout Tools

angle finder
band clamps
belt clamps
chalk line
combination square
computer software
digital meter
dog clamps
drawing board
dividers
electronic level
four-foot level
framing square
French curve
hand calculator
hand screw clamps
imperial and metric scale rules
laser beam level
marking/mortise gauge
measuring tape
mitre clamps
personal computer
pinch clamps
plumb bob
profile finder
scratch awl
set square
sliding bevel
speed square
spring clamps
steel square
straight edges
stud finder
T square
trammel points

Hand tools

auger bits
bar clamps
bench hook
brushes
burnisher
C clamps
cold chisels
coping saw
counterbore bits
countersink bits
doweling jig
drawknife
drill
expansion bit
fore plane
glass cutter
grease gun
honing stones
J-roller
keyhole saw
low-angle block plane
mitre trimmer
moisture meter
nail sets
oilcan
ripping bar
rubber mallet
smoothing plane
spokeshave
surform
wheel dresser
woodcarving chisels

Metalworking tools

centre punch
channel-lock pliers
file
metal shears
pliers
pliers, long-nose
scriber, metal rule

Portable power tools

angle grinder
belt sander
biscuit joiner
circular saw
detail sander
disc sander
heat gun
jig saw
laminate trimmer
mitre saw
nail gun
orbital sander
palm sander
panel trimmer
planer
powder-actuated tools
reciprocating saw
router
router bits
sprayer
stapler

Machines/Equipment

band saw
belt sander
bench grinder
circular saw
case clamp
clamp carrier
clamp rack
CNC router
CNC window manufacturing system
continuous gluing machine
conveyorized glue applicator
copy grinder
crosscut saw (manual)
curing ovens
curtain coater
dimension saw
disc sander
double-ended saw
dovetailer
doweling machine
drill press
drying system
edge belt sander
gang saw
glue gun
glue mixer
glue press
glue roller
glue spreader
groove cutter
guillotine
heat press
hinge boring machine
hinge chisel machine
horizontal boring machine
horizontal copying lathe
jointer
jointer knives
lift tables
multi-boring machine
multi-splindle shaper
oscillating sander
overhead pin router
pallet jack
panel saw
planer
planer knives
pneumatic press (clamping)
postforming machine
profile and moulding sanding machine
radial arm saw
re-saw band saw
scroll saw
shaper
shaper knives
sliding scoring panel saw
spider clamps (clamp carrier)
spindle sander
spray booth
spraying systems
stickers
stroke sander
thickness planer
toe-kick cutter
v-groove cutter
vacuum bag
vacuum press
veneer slicer
veneer splicer
wood lathe

Automated equipment

automatic copying shaper
automatic feeders
automatic gang saw
automatic mortising machine
automatic multiblade rip saw
automatic panel saw
automatic squaring machine
automatic panel stacker
automatic straightening
automatic throughfeed moulders
automatic wide belt sander
CNC router
CNC window manufacturing system
continuous gluing machine
conveyorized glue applicator
crosscut saw (computerised)
dust collection systems
edge banding machine
multiplaner
semi-automatic copying lathe
stacker

Shop-manufactured related devices

angle floats
arc cutter
assembling tables
assembly jigs
auxiliary fence
cauls
centre finders
cove-cutting fences
cradles
custom benches
feather boards
fixed floats
joint fastener jig
locating spacers
lifters
machining jigs
push blocks
push sticks
sanding blocks
saw horses
shooting board
sliding tables
steam bending box
straight edge
templates

GLOSSARY

adhesive	a substance that is used to bond together materials by surface attachment.
AWMAC	Architectural Woodwork Manufacturers Association of Canada.
bleaching	to apply a chemical solution to wood surfaces for lightening the colour.
Computer-assisted design (CAD)	a technique for designing furniture and cabinet items. This technique can also be used for producing workshop drawings and layouts.
Computer-assisted manufacturing (CAM)	a technique used for manufacturing furniture, cabinets and millwork using machine tools controlled by a computer which has been previously programmed.
crosscut	to cut across the grain of a piece of lumber or sheet goods.
designing	a complex problem solving activity whereby the cabinetmaker must create, invent, search and develop practical solutions to address technical problems. various solutions are analyzed, tried out, modified and incorporated in the design. these solutions are communicated in form of specifications, drawings or models.
final assembly	the final phase of production which involves the fitting together of previously subassembled components.
finishing	the application of finishing materials to wood surfaces for protection and to enhance appearance.
floating construction	a construction technique used in cabinetmaking and furniture production which allows for free movement of solid wood panel to minimize structural damages.
inlaying	the process of decorating by setting previously cut pieces into recessed surfaces.
interchangeability	the standardization of mass-produced parts which ensure that any one part fits in a sub or final assembly.
jigs and fixtures	devices specifically designed and built for the safe performance of repetitive work. they may be used either to hold the work in place or to guide the tools during machining or assembly processes.
layout	the process of setting out full size patterns and shapes of parts and components of cabinet/furniture and architectural woodwork components.

locating spacers	materials used to prevent inaccurate bonding while positioning laminates or veneers over substrate
millwork/architectural woodwork	refers to furniture, cabinets and machined wood products, such as doors, windows, stairways, mouldings, panelling, sidelights, transoms, trims, etc.
prototype	a preliminary version or full-scale model of a cabinet or furniture item, built to ascertain the soundness of the design features. it also helps the production planning process.
quality control	the process of inspecting parts, components or finished products to ensure compliance with previously specified standards.
refinishing	to repair and restore finished surfaces of furniture and cabinets.
restoring	to repair and reconstruct furniture and cabinet components.
rip	to cut along the grain of a piece of lumber, sheet goods or flat stock.
scoring	the process of pre-cutting materials to prevent chipping
shop drawing	technical drawing used to communicate detailed specifications and dimensions of furniture and cabinet items.
shop-manufactured related devices	devices which are custom-designed and manufactured by the cabinetmaker to carry out tasks more efficiently and safely.
solid wood break-out	to perform a rough-cut of material.
steam bending	the process of bending wood while it has been steamed to a malleable state.
sub-assembly	the assembly of parts by gluing, screwing, stapling or other means to form furniture or cabinet components.
templates	a pattern guide or model used for laying out or for verifying the accuracy of machined parts.
veneer	a thin layer of wood, sliced, cut or sawed to even thickness.
veneering	to prepare and cover surfaces with thin layers of wood or veneers.
wood laminating	the process of joining together thin strips of wood by gluing or other means to form a single part.
Workplace Hazardous Materials Information System (WHMIS)	the Canadian legislation governing the use of hazardous materials in the workplace.

BLOCKS AND TASKS WEIGHTING

BLOCK A **COMMON OCCUPATIONAL SKILLS**

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	National Average
%	NV	20	28	21	10	ND	NV	ND	25	25	NV	NV	22%

Task 1 Plans work activities.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	NV	15	15	25	25	ND	NV	ND	20	45	NV	NV	24%

Task 2 Uses hand and portable power tools.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	NV	25	35	30	30	ND	NV	ND	30	20	NV	NV	28%

Task 3 Maintains machines and equipment.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	NV	20	17	19	5	ND	NV	ND	25	15	NV	NV	17%

Task 4 Builds prototypes.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	NV	20	10	9	25	ND	NV	ND	10	10	NV	NV	14%

Task 5 Works on job site.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	NV	20	23	17	15	ND	NV	ND	15	10	NV	NV	17%

BLOCK B **MACHINING**

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	National Average
%	NV	20	26	18	30	ND	NV	ND	20	30	NV	NV	24%

Task 6 Machines components using stationary woodworking machines.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	NV	60	92	78	90	ND	NV	ND	80	75	NV	NV	79%

Task 7 Machines components using automated equipment.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	NV	40	8	22	10	ND	NV	ND	20	25	NV	NV	21%

BLOCK C **FORMING AND LAMINATING**

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	National Average
%	NV	10	11	12	10	ND	NV	ND	10	10	NV	NV	10%

Task 8 Bends wood and related materials.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	NV	65	42	25	25	ND	NV	ND	20	40	NV	NV	36%

Task 9 Laminates wood and related materials.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	NV	35	58	75	75	ND	NV	ND	80	60	NV	NV	64%

BLOCK D **VENEERS AND LAMINATES**

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	National Average
%	NV	15	11	14	15	ND	NV	ND	15	10	NV	NV	13%

Task 10 Applies veneers and inlays.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	NV	25	6	20	20	ND	NV	ND	40	35	NV	NV	25%

Task 11 Applies laminated materials.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	NV	25	50	39	45	ND	NV	ND	40	35	NV	NV	39%

Task 12 Applies solid surfaces.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	NV	25	19	20	5	ND	NV	ND	0	5	NV	NV	12%

Task 13 Applies edge treatment.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	NV	25	25	21	30	ND	NV	ND	20	25	NV	NV	24%

BLOCK E **ASSEMBLY**

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	National Average
%	NV	20	16	25	30	ND	NV	ND	25	15	NV	NV	22%

Task 14 Assembles cabinets.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	NV	34	47	50	40	ND	NV	ND	40	40	NV	NV	42%

Task 15 Assembles furniture.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	NV	33	13	29	50	ND	NV	ND	25	40	NV	NV	32%

Task 16 Assembles architectural woodwork/millwork products.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	NV	33	40	21	10	ND	NV	ND	35	20	NV	NV	26 %

BLOCK F **FINISHING AND RESTORATION**

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	National Average
%	NV	15	8	10	5	ND	NV	ND	5	10	NV	NV	9%

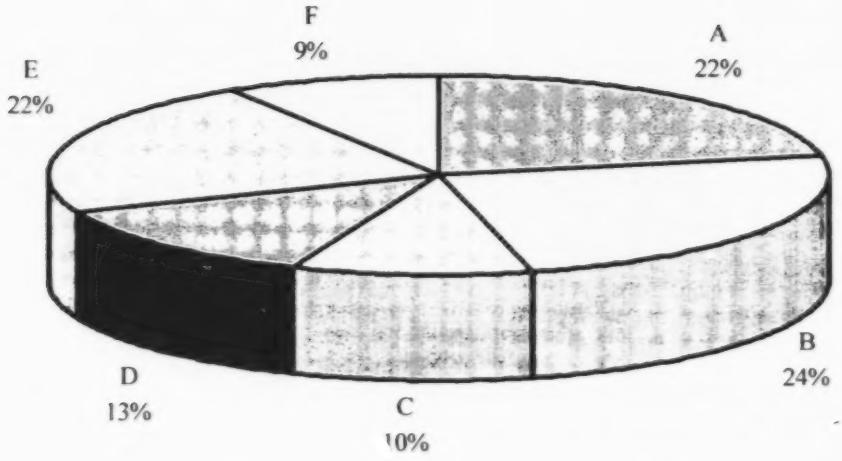
Task 17 Prepares and applies finishing materials.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	NV	50	86	57	40	ND	NV	ND	80	80	NV	NV	66%

Task 18 Restores woodwork.

	NF	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YK	
%	NV	50	14	43	60	ND	NV	ND	20	20	NV	NV	34%

PIE CHART*
Cabinetmaker



TITLES OF BLOCKS

Block A	Common Occupational Skills	Block D	Veneers and Laminates
Block B	Machining	Block E	Assembly
Block C	Forming and Laminating	Block F	Finishing and Restoration

* The average percentage of the total number of questions on an interprovincial examination, assigned to assess each block of the analysis, as derived from the collective input from workers within the occupation from all areas of Canada. Interprovincial examinations typically have from one hundred up to one hundred and fifty multiple choice questions on each examination.

CABINETMAKER (2000)

APPENDICE "E"

BLOCKS	TASKS	SUB-TASKS
A Common Occupational Skills	1. Plans work activities	1.01 Interprets drawings and specifications; 1.02 Estimates job cost; 1.03 Plans work process; 1.04 Makes shop drawings; 1.05 Lays out components
	2. Uses hand and portable power tools	2.01 Uses hand tools; 2.02 Maintains hand tools; 2.03 Uses portable power tools
	3. Maintains machines and equipment	3.01 Performs preventive maintenance; 3.02 Performs scheduled maintenance
	4. Builds prototypes	4.01 Designs templates, jigs and fixtures; 4.02 Fabricates templates, jig and fixtures; 4.03 Designs prototypes; 4.04 Builds prototypes
	5. Works on job site	5.01 Prepares products for shipment; 5.02 Installs products; 5.03 Installs hardware
B Machining	6. Machines components using stationary woodworking machines	6.01 Breaks out solid wood; 6.02 Breaks out sheet materials; 6.03 Dresses solid wood; 6.04 Shapes solid wood and composite materials; 6.05 Machines joints; 6.06 Sands products; 6.07 Performs quality control functions
	7. Machines components using automated equipment	7.01 Sets up automated equipment for production run; 7.02 Machines components
C Forming and Laminating	8. Bends wood and related materials	8.01 Bends cabinets and furniture parts; 8.02 Uses flexible composite materials; 8.03 Bends solid and composite materials
	9. Laminates wood and related materials	9.01 Builds forms for curved laminations; 9.02 Laminates parts and components

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CABINETMAKER (2000)

BLOCKS	TASKS	SUB-TASKS			
D	10. Applies veneers and inlays	10.01 Prepares veneers and inlays	10.02 Applies veneers and inlays		
	11. Applies laminated materials	11.01 Prepares plastic and metal laminates	11.02 Applies plastic and metal laminates		
	12. Applies solid surfaces	12.01 Prepares solid surfaces	12.02 Installs solid surfaces		
	13. Applies edge treatment	13.01 Prepares edges and materials	13.02 Applies edge treatment		
E	Assembly	14. Assembles cabinets	14.01 Performs sub-assembly of cabinets	14.02 Performs final assembly of cabinets	
		15. Assembles furniture	15.01 Performs sub-assembly of furniture	15.02 Performs final assembly of furniture	
		16. Assembles architectural woodwork/millwork products	16.01 Performs sub-assembly of architectural woodwork/ millwork products	16.02 Performs final assembly of architectural woodwork/ millwork products	
F	Finishing and Restoration	17. Prepares and applies finishing materials	17.01 Treats surfaces for finishing	17.02 Prepares finishing materials	17.03 Finishes wood products
		18. Restores woodwork	18.01 Repairs woodwork for restoration purposes	18.02 Touches up woodwork	18.03 Strips woodwork	18.04 Refinishes woodwork

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